



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/277,893	03/29/1999	KENNETH W. MARR	3543US(97-95	4223

7590 04/16/2002

BRICK G POWER
TRASK BRITT & ROSSA
P O BOX 2550
SALT LAKE CITY, UT 84110

EXAMINER

BROCK II, PAUL E

ART UNIT PAPER NUMBER

2815

DATE MAILED: 04/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/277,893

Applicant(s)

MARR, KENNETH W.

Examiner

Paul E Brock II

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-33,50-72 and 74-101 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-33,50-72 and 74-101 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 18.5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the laterally discrete spaced apart regions of a first layer of conductive material around and between which an underlying insulative structure is exposed and also the field oxide region being exposed must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the laterally discrete spaced apart regions of a first layer of conductive material around and between which an underlying insulative structure is exposed must be described in the specification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 17 – 33, 50 – 72 and 74 – 101 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is not clear where in the originally filed specification the “laterally discrete spaced apart regions of a first layer of conductive material around and between which an underlying insulative structure is exposed” is described. Similar terminology referring to the laterally discrete spaced apart regions exists in claims 17, 50 and 71 and therefore all pending claims are rejected.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 17 and 19 – 24 and 26 – 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al. in view of Chen (USPAT 5712206).

As far as the examiner can ascertain the rejections below read on the claimed invention:

Fischer et al. discloses a method of fabricating a fuse upon a semiconductor device in figures 1 – 3.

With regard to claim 17, in figure 1 Fischer et al. discloses disposing a layer of conductive material (11) over an insulative structure (10) of the semiconductor device. Fischer also discloses in figure 1 patterning the layer of conductive material to define at least two spaced apart regions of conductive material through which (111) the insulative structure is exposed. Fischer et al. discloses in figure 2 disposing a second conductive layer (12) over the semiconductor device, including adjacent to the at least two regions and to the insulative structure exposed between the at least two regions. In figure 3 Fischer et al. discloses patterning the second conductive layer so as to define at least two terminal regions of the fuse, each of which is in contact with a corresponding one of said at least two regions of conductive material, and a central region disposed between the at least two terminal regions and in contact with the insulative structure. Fischer et al. does not disclose the second conductive layer as a metal silicide. Chen teaches in column 5, lines 57 – 65 a conductive layer (62) for a fuse that is a metal silicide. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the metal silicide layer of Chen in the method of fabricating a fuse upon a semiconductor device of Fischer et al. in order to use a preferred conductive material for the fuse that is well known in the art as stated by Chen in column 5, lines 57 – 65.

With regard to claims 19, the method of Fischer et al. discloses in column 3, lines 42 - 50 patterning the layer of conductive material comprising disposing a mask over the semiconductor device and removing selected regions of the layer of conductive material through the mask.

With regard to claim 20, Fischer et al. does not disclose that the mask is photoresist. It is well known in the art to dispose a photoresist mask onto the semiconductor device, expose selected regions of the photoresist and develop the selected regions. It would have been obvious

Art Unit: 2815

to one of ordinary skill in the art at the time of the present invention to use the photoresist method in the method of Fischer et al. in order to pattern the metal layer.

With regard to claims 21 and 22, the method of Fischer et al. discloses in column 3, lines 34 – 50 that the removing comprises isotropically etching the selected regions of the layer of conductive material through the mask.

With regard to claim 23, Fischer et al. does not disclose etching the selected regions of the layer of conductive material with a wet etch. It is well known in the art that etching can comprise wet etching the selected regions of the layer of conductive material. It would have been obvious to one of ordinary skill in the art to use the wet etching method in the process of Fischer et al. in order to etch the conductive material with tapered edges.

With regard to claim 24, Fischer et al. discloses in column 2, lines 45 – 48 disposing the layer of conductive material comprises chemical vapor depositing the layer of conductive material.

With regard to 26, Chen discloses in column 5, lines 57 – 65 the metal silicide is tungsten silicide.

With regard to claim 27, the method of Fischer et al. and Chen inherently disclose patterning the layer of metal silicide comprising disposing a mask over the semiconductor device and removing selected regions of the layer of metal silicide through the mask.

With regard to claim 28, Fischer et al. and Chen do not disclose that the mask is photoresist. It is well known in the art to dispose a photoresist mask onto the semiconductor device, expose selected regions of the photoresist and develop the selected regions. It would

Art Unit: 2815

have been obvious to one of ordinary skill in the art at the time of the present invention to use the photoresist method in the method of Fischer et al. and Chen in order to pattern the metal silicide.

With regard to claims 29 and 30, the method of Fischer et al. and Chen inherently disclose that the removing comprises anisotropically etching the selected regions of the layer of metal silicide.

With regard to claim 31, Fischer et al. does not disclose etching the selected regions of the layer of the metal silicide with a dry etch. It is well known in the art that etching can comprise dry etching the selected regions of the layer of metal silicide. It would have been obvious to one of ordinary skill in the art to use the dry etching method in the process of Fischer et al. and Chen in order to etch the metal silicide with vertical edges.

With regard to claim 32, it is inherent that a contact is disposed in communication with at least one of the at least two terminal regions.

With regard to claim 33, it is inherent that another contact is disposed in communication with another of the at least two terminal regions.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al. and Chen as applied to claim 17 above, and further in view of Mitani (JPPAT 59-154038).

As far as the examiner can ascertain the rejections below read on the claimed invention.

With regard to claim 18, Fischer et al. and Chen do not disclose that disposing the layer of the conductive material comprises disposing polysilicon onto the insulative structure. Mitani discloses in figures 1 and 2 disposing polysilicon (5) as a conductive material for a fuse structure (3). It would have been obvious to one of ordinary skill in the art at the time of the present

Art Unit: 2815

invention to dispose the polysilicon of Mitani in the method of Fischer et al. and Chen in order to dispose a conductive material layer that will be both part of the fuse component and a gate electrode as stated by Mitani in the abstract and constitution.

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al. and Chen as applied to claim 17 above, and further in view of Sandhu.

As far as the examiner can ascertain the rejections below read on the claimed invention.

With regard to claim 26, Fischer et al. and Chen do not disclose that the layer of metal silicide is deposited by chemical vapor deposition. Sandhu discloses in figure 1 that depositing the layer of metal silicide (12) comprises chemical vapor depositing the layer of metal silicide. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the chemical vapor deposition process of Sandhu in the method of Fischer et al. and Chen in order to deposit a metal silicide film characterized by low impurities, good step coverage, and low stress with the silicon substrate as taught by Sandhu in the abstract.

9. Claims 50, 51, 55 – 60 and 62 – 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al. in view of Mitani and Chen.

As far as the examiner can ascertain the rejections below read on the claimed invention.

With regard to claim 50, Fischer et al. discloses in figures 1 – 3 a method of fabricating a fuse. Fischer et al. discloses in figure 1 fabricating spaced (111) apart regions comprising a first conductive layer (11) on an insulative structure (10) of a semiconductor device. Fischer et al. discloses in figures 2 and 3 fabricating a fuse comprising a second conductive layer (12),

Art Unit: 2815

including a central region disposed adjacent the insulative structure and between the spaced apart regions and at least two terminal regions disposed on opposite ends of the central region and adjacent the space apart regions. Fischer et al. does not disclose that the first conductive layer comprises polysilicon on the insulative structure. Mitani discloses in figures 1 and 2 polysilicon (5) as a conductive layer for a fuse structure (3). It would have been obvious to one of ordinary skill in the art at the time of the present invention to dispose the polysilicon of Mitani in the method of Fischer et al. in order to use a first conductive layer that will be both part of the fuse component and a gate electrode as stated by Mitani in the abstract and constitution. Fischer et al. and Mitani do not disclose the fusible second conductive layer is a metal silicide. Chen teaches in column 5, lines 57 – 65 a fusible conductive layer (62) that is a metal silicide. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the metal silicide layer of Chen in the method of fabricating a fuse upon a semiconductor device of Fischer et al. and Mitani in order to use a preferred conductive material for the fuse that is well known in the art as stated by Chen in column 5, lines 57 – 65.

With regard to claim 51, Fischer et al. discloses in figure 1 disposing the first conductive layer onto the insulative structure, and patterning the conductive material. As applied above the first conductive layer is polysilicon.

With regard to claims 55, the method of Fischer et al. discloses in column 3, lines 42 – 50 patterning comprises disposing a mask adjacent the first conductive layer and removing selected regions of the conductive layer through the mask. As applied above the first conductive layer is polysilicon.

With regard to claim 56, Fischer et al., Mitani and Chen do not disclose that the mask is photoresist. It is well known in the art to dispose a photoresist adjacent the first conductive layer, expose selected regions of the photoresist and develop the selected regions. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the photoresist method in the method of Fischer et al., Mitani and Chen in order to pattern the first conductive layer. As applied above the first conductive layer is polysilicon.

With regard to claims 57 and 58, the method of Fischer et al. discloses in column 3, lines 34 – 50 that the removing comprises isotropically etching the selected regions of the first conductive layer through the mask. As applied above the first conductive layer is polysilicon.

With regard to claim 59, Fischer et al., Mitani and Chen do not disclose etching the selected regions of the first conductive layer with a wet etch. It is well known in the art that etching can comprise wet etching the selected regions first conductive layer. It would have been obvious to one of ordinary skill in the art to use the wet etching method in the process of Fischer et al., Mitani and Chen in order to etch the first conductive layer with tapered edges. As applied above the first conductive layer is polysilicon.

With regard to claim 60, Fischer et al. discloses in figure 2 disposing the second conductive layer adjacent the spaced apart regions and the insulative structure exposed therebetween. As applied above the second conductive layer is a metal silicide.

With regard to claim 62, Fischer et al. discloses in figure 2 patterning the second conductive layer. As applied above the second conductive layer is a metal silicide.

With regard to claim 63, the method of Fischer et al., Mitani and Chen inherently discloses patterning the layer of metal silicide comprising disposing a mask over the

Art Unit: 2815

semiconductor device and removing selected regions of the layer of metal silicide through the mask.

With regard to claim 64, Fischer et al., Mitani and Chen do not disclose that the mask is photoresist. It is well known in the art to dispose a photoresist mask onto the semiconductor device, expose selected regions of the photoresist and develop the selected regions. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the photoresist method in the method of Fischer et al., Mitani and Chen in order to pattern the metal silicide.

With regard to claims 65 and 66, the method of Fischer et al., Mitani and Chen inherently discloses that the removing comprises anisotropically etching the selected regions of the metal silicide.

With regard to claim 67, Fischer et al., Mitani and Chen does not disclose etching the selected regions of the layer of the second conductive layer with a dry etch. It is well known in the art that etching can comprise dry etching the selected regions of the layer of second conductive layer. It would have been obvious to one of ordinary skill in the art to use the dry etching method in the process of Fischer et al., Szluk et al. and Sandhu in order to etch the metal silicide with vertical edges.

With regard to claim 68, Fischer et al. discloses in figures 2 and 3 the patterning of the second conductive layer comprises defining the at least two terminal regions of the fuse adjacent the spaced apart regions and the central region of the fuse adjacent the insulative structure. As applied above the second conductive layer is metal silicide.

Art Unit: 2815

10. Claims 52 – 54, 69 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al., Mitani and Chen as applied to claims 50 and 51 above, and further in view of Degelormo et al.

As far as the examiner can ascertain the rejections below read on the claimed invention.

Fischer et al., Mitani and Chen do not disclose disposing the polysilicon by chemical vapor deposition. Degelormo et al. teaches in column 6, lines 60-63 of chemical vapor depositing doped polysilicon wherein doping occurs substantially simultaneously with the disposing. The method of Degelormo et al. would further allow the spaced apart regions of polysilicon to be doped, and the doping to occur substantially simultaneously with disposing polysilicon on the insulative structure. It would have been obvious to use the polysilicon disposing method of Degelormo et al. in the method of Fischer et al., Mitani and Chen in order to make lower resistance polysilicon as stated by Degelormo et al. in column 6, lines 32 – 35.

11. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al., Mitani and Chen as applied to claims 50 and 60 above, and further in view of Sandhu.

As far as the examiner can ascertain the rejections below read on the claimed invention.

With regard to claim 26, Fischer et al., Mitani and Chen do not disclose that the layer of metal silicide is deposited by chemical vapor deposition. Sandhu discloses in figure 1 that depositing the layer of metal silicide (12) comprises chemical vapor depositing the layer of metal silicide. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the chemical vapor deposition process of Sandhu in the method of Fischer et al.,

Art Unit: 2815

Mitani and Chen in order to deposit a metal silicide film characterized by low impurities, good step coverage, and low stress with the silicon substrate as taught by Sandhu in the abstract.

12. Claims 71, 74 – 86, 88 – 96 and 101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitani in view of Fischer et al. and Chen

As far as the examiner can ascertain the rejections below read on the claimed invention.

With regard to claim 71, and 74, Mitani discloses in figures 1 and 2 a method of substantially simultaneously fabricating a gate and a fuse on a semiconductor substrate. Mitani discloses in figures 1 and 2 disposes a layer of insulative material (4) over at least an exposed region of the semiconductor substrate (1). Mitani discloses in figures 1 and 2 also disposes a layer of polysilicon (5) over the semiconductor substrate, including over the layer of insulative material and over field oxide regions (2) disposed on the semiconductor substrate. Mitani discloses in figures 1 and 2 patterning at least regions of the layer of polysilicon (5) disposed over at least one field oxide region of the field oxide regions. Mitani discloses in figures 1 and 2 forming a layer of metal silicide (6) on the layer of polysilicon. Mitani does not disclose defining at least two spaced apart regions of polysilicon. Fischer et al. teaches in figure 1 patterning regions (11) comprising defining at least two spaced apart regions of a conductor layer on at least one field oxide region (10) and between which a portion of the at least one field oxide region is exposed therebetween. Fischer et al. also teaches in figure 2 and 3 defining a fuse comprising defining a central region (111) disposed adjacent and substantially between the at least two spaced apart regions and defining at least two terminal regions, each terminal region continuous with an end of the central region and disposed adjacent one of the at least two spaced

Art Unit: 2815

apart regions. It would have been obvious to one of ordinary skill in the art at the time of the present invention to pattern the silicon layer of Mitani with the two spaced apart regions of Fischer et al. in order to create a laser-programmable or electric-current-programmable link features having locally reduced cross-sectional area resulting from locally reduced thickness of a conductive path, while width remains essentially constant, as stated by Fischer et al. in column 1, lines 60 – 65. Mitani and Fischer et al. do not disclose the fusible second conductive layer is a metal silicide. Chen teaches in column 5, lines 57 – 65 a fusible conductive layer (62) that is a metal silicide. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the metal silicide layer of Chen in the method of fabricating a fuse upon a semiconductor device of Mitani and Fischer et al. in order to use a preferred conductive material for the fuse that is well known in the art as stated by Chen in column 5, lines 57 – 65.

With regard to claim 75, the method of Mitani, Fischer et al. and Chen defining the at least two spaced apart regions inherently comprises disposing a mask over the layer of polysilicon and removing selected regions of the layer of polysilicon through the mask.

With regard to claim 76, Mitani, Fischer et al. and Chen do not disclose that the mask is photoresist. It is well known in the art to dispose a photoresist mask over a layer of polysilicon, expose selected regions of the photoresist and develop the selected regions. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the photoresist method in the method of Mitani, Fischer et al. and Chen in order to pattern the polysilicon.

With regard to claims 77 and 79, the method of Mitani, Fischer et al. and Chen inherently discloses that the removing comprises isotropically etching the polysilicon.

Art Unit: 2815

With regard to claim 78, Mitani, Fischer et al. and Chen do not disclose etching the selected regions with a wet etch. It is well known in the art that etching can comprise wet etching the selected regions of polysilicon. It would have been obvious to one of ordinary skill in the art to use the wet etching method in the process of Mitani, Fischer et al. and Chen in order to etch the polysilicon to have slanted sidewalls.

With regard to claims 80 and 81, Mitani discloses in figures 1 and 2 patterning gate regions of the layer of polysilicon that occurs substantially simultaneously with the patterning the at least regions of the layer of polysilicon.

With regard to claim 82, the method of Mitani inherently comprises disposing a mask over the layer of polysilicon and removing selected regions of the layer of polysilicon through the mask.

With regard to claim 83, Mitani does not disclose that the mask is photoresist. It is well known in the art to dispose a photoresist mask onto a semiconductor device, expose selected regions of the photoresist and develop the selected regions. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the photoresist method in the method of Mitani in order to pattern the polysilicon.

With regard to claims 84 and 86, the method of Mitani inherently discloses that the removing comprises anisotropically etching the selected regions.

With regard to claim 85, Mitani does not disclose etching the selected regions with a dry etch. It is well known in the art that etching can comprise dry etching the selected regions. It would have been obvious to one of ordinary skill in the art to use the dry etching method in the process of Mitani in order to etch the polysilicon to have vertical sidewalls.

Art Unit: 2815

With regard to claim 88, the method of Mitani, Fischer et al. and Chen defining the gate from at least the layer of metal silicide inherently comprises disposing a mask over the layer of metal silicide and removing selected regions of the layer of metal silicide through the mask.

With regard to claim 89, Mitani, Fischer et al. and Chen do not disclose that the mask is photoresist. It is well known in the art to dispose a photoresist mask over a layer of metal silicide, expose selected regions of the photoresist and develop the selected regions. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the photoresist method in the method of Mitani, Fischer et al. and Chen in order to pattern the metal silicide.

With regard to claims 90 and 92, the method of Mitani, Fischer et al. and Chen inherently discloses that the removing comprises anisotropically etching the selected regions.

With regard to claim 91, Mitani, Fischer et al. and Chen do not disclose etching the selected regions with a dry etch. It is well known in the art that etching can comprise dry etching the selected regions. It would have been obvious to one of ordinary skill in the art to use the dry etching method in the process of Mitani, Fischer et al. and Chen in order to etch the metal silicide to have vertical sidewalls.

With regard to claims 93 – 96, Mitani, Fischer et al. and Chen read on the claimed invention either inherently or obviously as applied to similar above claims.

With regard to claim 101, Mitani discloses in figure 1 doping at least one source region (18) and at least one drain region (19) of the semiconductor substrate, the at least one source region and the at least one drain region disposable adjacent the gate on opposite sides thereof.

13. Claim 72 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitani, Fischer et al. and Chen as applied to claim 71 above, and further in view of Degelormo et al.

As far as the examiner can ascertain the rejections below read on the claimed invention.

Mitani, Fischer et al. and Chen do not disclose disposing the polysilicon by chemical vapor deposition. Degelormo et al. teaches in column 6, lines 60-63 of chemical vapor depositing doped polysilicon. It would have been obvious to use the polysilicon disposing method of Degelormo et al. in the method of Mitani, Fischer et al. and Chen in order to make lower resistance polysilicon as stated by Degelormo et al. in column 6, lines 32 – 35.

14. Claim 87 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mitani, Fischer et al. and Chen as applied to claim 71 above, and further in view of Sandhu.

As far as the examiner can ascertain the rejections below read on the claimed invention.

Mitani, Fischer et al. and Chen do not disclose disposing metal silicide by chemical vapor deposition. Sandhu teaches in figure 1 disposing a layer of metal silicide comprising chemical vapor depositing the layer of metal silicide (12). It would have been obvious at the time of the present invention to use the disposing of metal silicide method of Sandhu in the method of Mitani, Fischer et al. and Chen in order to use the properties of low bulk resistance and low stress of the metal silicide as stated by Sandhu in column 1, lines 12 – 21.

15. Claims 97 – 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mitani, Fischer et al. and Chen as applied to claim 71 above, and further in view of Ukeda et al.

As far as the examiner can ascertain the rejections below read on the claimed invention.

Mitani, Fischer et al. and Chen do not disclose removing exposed regions of the insulative material through the layer of polysilicon. Ukeda et al. discloses in figures 1f and 1g and columns 3 and 4, lines 64 – 67 and 1 – 15 respectively removing exposed regions of the layer of insulative material (2) through the layer of polysilicon by anisotropically, dry etching the exposed regions of insulative material. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the removing methods of Ukeda et al. in the method of Mitani, Fischer et al. and Chen in order to complete the formation of a transistor furnished with a gate electrode as described by Ukeda et al. in column 4, lines 10 – 15.

Response to Arguments

16. Applicant's arguments with respect to claims 17 – 33, 50 – 72 and 74 – 101 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Art Unit: 2815

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II
April 10, 2002

A handwritten signature in black ink, appearing to read 'Eddie Lee', is positioned above the printed name and title.

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800